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EXAMINER	
LEWIS, BEN	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/091,821	BECKMANN ET AL.	
	Examiner	Art Unit	
	Ben Lewis	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *38-45,51 and 54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *38-45,51 and 54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 13th, 2007 has been entered. Claims 38, 45 and 51 have been amended.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 51 and 54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The recitation of steps (E) to (H) are not

present in the specification as originally filed. Applicant's specification teaches in Paragraph 0041 that in the second operation mode that air is prevented from entering the anode chamber **66** and introducing fuel to the water generator/DMFC **61** without a load being connected between the anode and cathode aspects of the water generator/DMFC **61**. However there is no embodiment present in Applicant's specification where air and fuel is supplied to the water generator/DMFC followed by a load being detached from the water generator/DMFC since the embodiment of Paragraph 0041 of Applicant's specification teach that air is prevented form entering the anode followed by detaching the load.

3. Claims 51 and 54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant has not disclosed how to make or use the invention. Detaching the load from the water generator/DMFC system does not cause the system not to generate electricity. Furthermore, it is not clear how one of ordinary skill in the art would be able to practice the instant invention since there is no air being fed to the cathode of the system claimed in claim 51.

Factors to be considered in determining whether the claimed invention would require undue experimentation are given in MPEP 2164.01 (a). In re Wands, 858 F. 2d 731; 8 USPQ 2d 1400, 1404 (Fed. Cir. 1988). Only the relevant factors will be addressed for determining undue experimentation of the presently claimed invention. The relevant factors are (A) Breadth of the claims; (B) The amount of direction provided by the inventor, (C) The existence of working examples, and (D) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

Factor (A) Breadth of the claims:

No guidance is given in the specification as to how the water generator/DMFC system is able to function without air being fed to the cathode.

Factor (B) The amount of direction provided by the inventor.

This factor has been addressed by factor (A) above.

Factor (C) The existence of working examples:

This factor has been addressed by factor (A) above.

Factor (D) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

This factor has been addressed by factor (A) above.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 41 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 41 recites the limitation "said second opening". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 38-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkinson et al. (U.S. Patent No. 6,682,839 B2) and further in view of Nakamura (Japanese Patent No. JP356114284A).

With respect to claims 38 and 39, Wilkinson et al teach that fuel cell stack **10** is depicted schematically, showing various layers of the stack without showing the housing, internal manifolds, or sealing mechanisms which prevent intermixing of reactants. FIG. 1 illustrates the stacked electrochemically active layers of three electrochemical fuel cell assemblies. In particular, for each fuel cell assembly, these layers are the electrolyte **20**, a cathode **22**, and an anode **24**, all disposed between a pair of flow field plates, which are also known as separator plates **26**. A single separator plate **26** may be shared between two adjacent fuel cell assemblies. The electrochemically active area of the fuel cells is defined by a cathode electrocatalyst **28** disposed at an interface between electrolyte **20** and cathode **22** and an anode electrocatalyst **30** disposed at an interface between electrolyte **20** and anode **24**. In a preferred embodiment, electrolyte layer **20** comprises an ion exchange membrane. Oxidant supply subsystem **32** and heat transfer liquid supply subsystem **42**, supply an oxidant fluid stream comprising an oxidant and a heat transfer liquid to oxidant supply manifold **34**. Oxidant supply manifold **34** is shown as an external manifold for illustrative purposes, but an internal manifold passing through the thickness of the layers of fuel cell stack **10** is also a preferred embodiment. Oxidant supply manifold 34 directs the oxidant fluid stream to oxidant fluid passages of each of the individual fuel cell assemblies (Col 8 lines 39-67). Fuel supply subsystem **38** supplies a fuel stream to

fuel supply manifold **40**. Fuel supply manifold **40** is shown as an external manifold for illustrative purposes, but an internal fuel supply manifold is also a preferred embodiment. Fuel supply manifold **40** directs the fuel stream to fuel fluid passages and anode electrocatalyst **30** of each of the individual fuel cell assemblies. The fuel stream may be exhausted from stack **10**, recirculated, or dead-ended, depending on the fuel and the desired mode of operation. However, even for dead-ended operation, an exhaust manifold **39** is typically provided so that the fuel fluid passages may be periodically purged by opening a purge valve (not shown in FIG. 1) which is closed during dead-ended operation. Valve **41** may be used to shut off the fuel supply stream and/or to regulate the amount of fuel supplied to fuel cell stack **10**. (Col 9 lines 30-55).

Wilkinson et al. also teach that the fuel fluid stream which is supplied to the anode may be a gas such as substantially pure hydrogen or a reformate stream comprising hydrogen. Alternatively, a liquid fuel stream such as, for example, aqueous methanol may be used (Col 2 lines 1-5).

With regard to air and fuel being introduced into said anode chamber Wilkinson et al does not specifically teach allowing introduction of air into said anode chamber. However, Nakamura disclose a device for starting methanol fuel cells wherein, the surface of the fuel electrode is subjected to catalytic burning to shorten the warming-up time of the fuel cell by providing an air bypath and supplying fuel added with air to the surface of the fuel electrode (See Abstract). Nakamura also teach that air is supplied from a blower **17** through an air path **16** into an air chamber **5**, which is adjacent to the air-electrode side chamber **12** with the support **7** placed between them. The air path **16**

is connected to a fuel path **13** by means of a bypath **18**. In starting the battery "fuel cell" operation, a fuel-supplying pump **15** is driven and a bypath valve **19** is opened, before air and methanol as a fuel are supplied into the fuel-electrode side chamber **11** (See abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feeding of air with fuel into the anode chamber of Nakamura into the fuel cell of Wilkinson because Nakamura teach that introduction of fuel and air into the anode chamber shortens the warming-up time of the fuel cell (See abstract).

With respect to air and fuel inlets to the anode chamber being separate first and second openings. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the integral fuel and air inlet ports to the anode chamber of Nakamura separate fuel and air inlet ports to the anode chamber because making separable components integral is a matter of obvious engineering choice. In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965) (A claim to a fluid transporting vehicle was rejected as obvious over a prior art reference which differed from the prior art in claiming a brake drum integral with a clamping means, whereas the brake disc and clamp of the prior art comprise several parts rigidly secured together as a single unit. The court affirmed the rejection holding, among other reasons, "that the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice."); but see Schenck v.

With respect to claims 40 and 42, Wilkinson et al teach that valve **6** may be used to shut off the oxidant supply stream and/or to control the amount of oxidant supplied to fuel cell stack **10**. Oxidant supply subsystem **32** typically comprises a purification unit and a blower or compressor. The purification unit may comprise, for example, filters for removing particulate contaminants from air, which may be the source of the oxidant supply stream. In some applications, such as space vehicles or submarines, the oxidant may be supplied from a pressure vessel that contains air or substantially pure oxygen under pressure (Col 9 lines 4-15). With respect to a load connected across the fuel cell such that the system functions in an electricity generating mode Wilkinson et al teach that to improve the viability of fuel cells as a commercial power source, it is generally desirable to improve the power density of the stack, that is, to reduce the stack dimensions and weight for a given electrical power output capability (Col 1 lines 55-65). Therefore the fuel cell of Wilkinson et al is used to supply power to a load.

With respect to claim 41, Wilkinson et al teach that Fuel supply subsystem **38** supplies a fuel stream to fuel supply manifold **40**. Fuel supply manifold **40** is shown as an external manifold for illustrative purposes, but an internal fuel supply manifold is also a preferred embodiment. Fuel supply manifold **40** directs the fuel stream to fuel fluid passages and anode electrocatalyst **30** of each of the individual fuel cell assemblies.

The fuel stream may be exhausted from stack **10**, recirculated, or dead-ended, depending on the fuel and the desired mode of operation. However, even for dead-ended operation, an exhaust manifold **39** is typically provided so that the fuel fluid passages may be periodically purged by opening a purge valve (not shown in FIG. 1) which is closed during dead-ended operation. Valve **41** may be used to shut off the fuel supply stream and/or to regulate the amount of fuel supplied to fuel cell stack **10**. (Col 9 lines 30-55).

With respect to claim 43, Wilkinson et al teach that valve **6** may be used to shut off the oxidant supply stream and/or to control the amount of oxidant supplied to fuel cell stack **10**. Oxidant supply subsystem **32** typically comprises a purification unit and a blower or compressor. The purification unit may comprise, for example, filters for removing particulate contaminants from air, which may be the source of the oxidant supply stream. In some applications, such as space vehicles or submarines, the oxidant may be supplied from a pressure vessel that contains air or substantially pure oxygen under pressure (Col 9 lines 4-15). The instant specification recites: "said water generator/DMFC 61 can be used to generate water by: 1) introducing excess fuel (in proportion to the demand of the attached load) to a DMFC of standard design and materials; or 2) introducing fuel to a to water generator/DMFC 61t without a load being connected between the anode and cathode aspects of the water generator/DMFC 61. By doing so, fuel crossover is promoted, and fuel that passes through the PCM is

oxidized without generating electricity, thus forming additional water in the cathode chamber 67 of the water generator/DMFC 61. It may be further possible to intentionally vary said load attached to water generator/DMFC 61 periodically in order to periodically induce fuel crossover, and resulting generation of water" (Paragraph 0041).

Wilkinson et al do not specifically teach a load is uncoupled and not connected across the fuel cell such that there is fuel crossover and the system functions in a water genenrationg mode at the cathode chamber. However, it is the position of the examiner that such properties as fuel crossover and water generation at the cathode chamber of a direct methanol fuel cell are inherent, given that Wilkinson et al and the present application utilize a direct methanol fuel cell with air and fuel being fed to the anode. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

9. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkinson et al. (U.S. Patent No. 6,682,839 B2) in view of Nakamura (Japanese Patent No. JP356114284A) and further in view of Tillmetz et al. (U.S. Patent No. 6,410,175 B1).

With respect to claim 45, Wilkinson et al teach that fuel cell stack **10** is depicted schematically, showing various layers of the stack without showing the housing, internal

manifolds, or sealing mechanisms which prevent intermixing of reactants. FIG. 1 illustrates the stacked electrochemically active layers of three electrochemical fuel cell assemblies. In particular, for each fuel cell assembly, these layers are the electrolyte **20**, a cathode **22**, and an anode **24**, all disposed between a pair of flow field plates, which are also known as separator plates **26**. A single separator plate **26** may be shared between two adjacent fuel cell assemblies. The electrochemically active area of the fuel cells is defined by a cathode electrocatalyst **28** disposed at an interface between electrolyte **20** and cathode **22** and an anode electrocatalyst **30** disposed at an interface between electrolyte **20** and anode **24**. In a preferred embodiment, electrolyte layer **20** comprises an ion exchange membrane. Oxidant supply subsystem **32** and heat transfer liquid supply subsystem **42**, supply an oxidant fluid stream comprising an oxidant and a heat transfer liquid to oxidant supply manifold **34**. Oxidant supply manifold **34** is shown as an external manifold for illustrative purposes, but an internal manifold passing through the thickness of the layers of fuel cell stack **10** is also a preferred embodiment. Oxidant supply manifold 34 directs the oxidant fluid stream to oxidant fluid passages of each of the individual fuel cell assemblies (Col 8 lines 39-67). Fuel supply subsystem **38** supplies a fuel stream to fuel supply manifold **40**. Fuel supply manifold **40** is shown as an external manifold for illustrative purposes, but an internal fuel supply manifold is also a preferred embodiment. Fuel supply manifold **40** directs the fuel stream to fuel fluid passages and anode electrocatalyst **30** of each of the individual fuel cell assemblies. The fuel stream may be exhausted from stack **10**, recirculated, or dead-ended, depending on the fuel and the desired mode of operation.

However, even for dead-ended operation, an exhaust manifold **39** is typically provided so that the fuel fluid passages may be periodically purged by opening a purge valve (not shown in FIG. 1) which is closed during dead-ended operation. Valve **41** may be used to shut off the fuel supply stream and/or to regulate the amount of fuel supplied to fuel cell stack **10**. (Col 9 lines 30-55).

Wilkinson et al. also teach that the fuel fluid stream which is supplied to the anode may be a gas such as substantially pure hydrogen or a reformate stream comprising hydrogen. Alternatively, a liquid fuel stream such as, for example, aqueous methanol may be used (Col 2 lines 1-5).

With regard to air and fuel being introduced into said anode chamber Wilkinson et al does not specifically teach allowing introduction of air into said anode chamber. However, Nakamura disclose a device for starting methanol fuel cells wherein, the surface of the fuel electrode is subjected to catalytic burning to shorten the warming-up time of the fuel cell by providing an air bypath and supplying fuel added with air to the surface of the fuel electrode (See Abstract). Nakamura also teach that air is supplied from a blower **17** through an air path **16** into an air chamber **5**, which is adjacent to the air-electrode side chamber **12** with the support **7** placed between them. The air path **16** is connected to a fuel path **13** by means of a bypath **18**. In starting the battery "fuel cell" operation, a fuel-supplying pump **15** is driven and a bypath valve **19** is opened, before air and methanol as a fuel are supplied into the fuel-electrode side chamber **11** (See abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feeding of air with fuel into the anode

chamber of Nakamura into the fuel cell of Wilkinson because Nakamura teach that introduction of fuel and air into the anode chamber shortens the warming-up time of the fuel cell (See abstract).

With respect to air and fuel inlets to the anode chamber being separate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the integral fuel and air inlet ports to the anode chamber of Nakamura separate fuel and air inlet ports to the anode chamber because making separable components integral is a matter of obvious engineering choice. In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965) (A claim to a fluid transporting vehicle was rejected as obvious over a prior art reference which differed from the prior art in claiming a brake drum integral with a clamping means, whereas the brake disc and clamp of the prior art comprise several parts rigidly secured together as a single unit. The court affirmed the rejection holding, among other reasons, "that the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice."); but see Schenck v.

Wilkinson et al as modified by Nakamura do not specifically teach coupling to a second fuel cell to deliver water to the anode of said second fuel cell. However, Tillmetz et al discloses a fuel cell system with improved starting capability wherein, FIG. 3 shows another embodiment of a fuel cell system **30** which also includes first and second fuel cell stacks **21**, **22**, a fuel processing subsystem **29** comprising a reformer **23**, and a methanol reservoir **24**, each of which is similar in construction and operation to those shown in FIG. 2. However, a starting fluid reservoir **26** comprising a supply of starting

fluid is included and a different procedure may be followed with regards to water reservoir **25**. In FIG. 3, during start-up, a starting fluid is provided directly from starting fluid reservoir **26** through valve **28a** to fuel inlet **21a** of the first fuel cell stack **21**. Feedstock for the reformer is provided by the controlled mixing of methanol from methanol reservoir **24** and water from water reservoir **25** at junction **27b**. Again, the feedstock is directed to reformer inlet **23a**. Here, a supply of water for the water reservoir **25** is obtained from the product water generated by the operating first and/or second fuel cell stacks **21**, **22**. Thus, water from first stack outlet **21b** and second stack outlet **22b** is collected and directed into water reservoir **25**. At system shutdown, the water reservoir **25** may be emptied so as to avoid freezing. In this embodiment, it may be possible to rely on the production of water from the first stack **21** during start-up to prepare a sufficient amount of aqueous feedstock for the reformer, after which production of water is used from both stacks **21**, **22** after start-up (Col 6 lines 55-67); (Col 7 lines 1-20). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the water from the first stack into the second stack of Tillmetz et al into the fuel cell system of Wilkinson et al as modified by Nakamura because Tillmetz et al teach that it may be possible to rely on the production of water from the first stack **21** during start-up to prepare a sufficient amount of aqueous feedstock for the reformer, after which production of water is used from both stacks **21**, **22** after start-up (Col 7 lines 1-20)

10. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkinson et al. (U.S. Patent No. 6,682,839 B2) and Nakamura (Japanese Patent No. JP356114284A) as applied to claim 43 above and further in view of Grasso et al. (U.S. Patent No. 6,475,652 B1).

With respect to claim 44, Wilkinson et al as modified by Nakamura teach that fuel cell stack in paragraph 17 above. Wilkinson et al as modified by Nakamura do not specifically teach the system further comprising a load being a variable load that can be used to periodically induce fuel crossover, resulting in generation of water. However, Grasso et al. teach a fuel cell power plant wherein in operation of PEM fuel cells, it is critical that a proper water balance be maintained between a rate at which water is produced at the cathode electrode including water resulting from proton drag through the PEM electrolyte and rates at which water is removed from the cathode and at which water is supplied to the anode electrode. An operational limit on performance of a fuel cell is defined by an ability of the cell to maintain the water balance as electrical current drawn from the cell into the external load circuit varies and as an operating environment of the cell varies. For PEM fuel cells, if insufficient water is returned to the anode electrode, adjacent portions of the PEM electrolyte dry out thereby decreasing the rate at which hydrogen ions may be transferred through the PEM and also resulting in cross-over of the reducing fluid leading to local over heating. Similarly, if insufficient water is removed from the cathode, the cathode electrode may become flooded effectively limiting oxidant supply to the cathode and hence decreasing current flow. Additionally, if too much water is removed from the cathode, the PEM may dry out limiting ability of

hydrogen ions to pass through the PEM, thus decreasing cell performance (Col 1 lines 60-67);(Col 2 lines 1-20). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the varying of an external load of Grasso et al in to the fuel cell system of Wilkinson et al as modified by Nakamura because Grasso et al teach that an operational limit on performance of a fuel cell is defined by an ability of the cell to maintain the water balance as electrical current drawn from the cell into the external load circuit varies and as an operating environment of the cell varies. For PEM fuel cells, if insufficient water is returned to the anode electrode, adjacent portions of the PEM electrolyte dry out thereby decreasing the rate at which hydrogen ions may be transferred through the PEM and also resulting in cross-over of the reducing fluid leading to local over heating (Col 1 lines 60-67).

Response to Arguments

11. Applicant's arguments filed on August 24th, 2006 have been fully considered but they are not persuasive.

Applicant's principal arguments are

(a) Wilkinson does not teach generating water that may be used in another fuel cell or in another manner as in Applicant's claimed invention. As noted by the Examiner, Wilkinson describes an experiment in which "1% of air was added to the fuel fluid stream supplied to the anode." (Col. 14, line 52-53). However, Wilkinson does not describe a plurality of openings, a first opening being an air inlet allowing air introduction into said anode chamber, and a second opening being a separate fuel inlet allowing introduction of fuel into said an\-ode chamber, such that when air and fuel are introduced into said anode chamber, fuel is oxidized on said anode aspect into water and carbon dioxide, as claimed in Applicant's amended independent claims. Wilkinson merely suggests injecting a small fraction of air into the fuel inlet stream - not allowing air into a separate air inlet in the anode chamber in order to create water, as claimed by Applicant.

In response to Applicant's arguments, please consider the following comments.

12. (a) Applicant's arguments with respect to claims 38-45, 51 and 54 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ben Lewis

Patent Examiner
Art Unit 1745

Susy Tsang-Foster
Susy Tsang-Foster
Supervisory Patent Exr